REMARKS/ARGUMENTS

We have canceled claims 1-3, 34-38, and 59-63, added new claims 64-66, and amended claims 4, 6, 7, 43, 47, 50, 54, and 56-58. After entering this amendment, claims 4-18, 20-33, 39-58, and 64-66 will be pending in this application among which the examiner has withdrawn claims 9-18, 25-33 and 39-42 from consideration.

The examiner objected to the quality of the drawings. In response we are submitting herewith a set of formal drawings to replace the original set of drawings and in which the problems raised by the examiner have been addressed.

We acknowledge the examiner's indication that claims 19-24 are allowable. And we acknowledge the examiner's indication that claims 4, 5, 47-49, 51, and 58 would be allowable if written in independent form including all limitations of the base claims and any intervening claims. In response, we have made claims 4 and 47 independent claims by adding all limitations of the corresponding base claims and any intervening claims.

We have also amended claims 50 and 54 to address the objections raised by the examiner. And we have amended other claims to put them into better form and to make more explicit features that were implicit in the original claims.

The examiner rejected claims 1-3, 6-8, 34, 37, and 38 under 35 U.S.C. §102(b) as anticipated by WO 89/03593 to Huang et al. We have canceled claims 1-3, 34, 37, and 38, without prejudice, and we have made claims 6, 7, and 8 depend from claim 4, which the examiner had indicated as allowable.

The Examiner also rejected claims 43-46, 52, 53, and 61-63 under 35 U.S.C. §102(b) as anticipated by U.S. 4,680,085 to Vijan et al. The Examiner points to the structures shown in Vijan's Figs. 4 and 7 and argues that Vijan et al. disclose all of the claimed elements. More specifically, the examiner argues that conductive layer 22 on top of the Vijan device and the two conductive layers beneath the Vijan device, namely, conductive layer 12 and metal layer 14, are all transmissive to light. However, we disagree. Vijan never describes a single embodiment in which all three of these layers are transmissive to light.

Vijan does describe embodiments in which layers 12 and 14 are light transmissive to light. For example, some display applications require a transmissive pixel electrode, in which case layer 12 is made of transparent conductive oxide and metal layer 14 is made of chromium

that is thin enough to allow some reasonable percentage of light (e.g. 50%) to pass through (Col. 6, line 57 to col. 7, line3). According to Vijan, if the thickness of the chromium metal layer is kept below 200 angstroms it will satisfy this requirement. Vijan also notes that there are display applications that do not require a transmissive pixel, in which case the substrate is opaque and conductive layer 14 can be any conductive metal such as chromium, aluminum, molybdenum, molybdenum tantalum alloy, tantalum tungsten or palladium (col. 7, lines 3-10).

The first time that Vijan mentions depositing metal layer 22 at the top of the diode structure, he states:

> A metal layer 22 is then deposited on top of the n type layer 20 as by electron beam evaporation or thermal evaporation of chromium. (Other metals previously mentioned with respect to layer 15 may alternatively be used for layer 22.) The chromium layer 22, which may be in the range of 1000 angstroms to 3000 angstroms thick, and is preferably on the order of 1500 angstroms thick, forms a top metal contact which protectively covers the n type layer 20... (Col. 7, lines 49-56).

At 1000 angstroms, the chromium metal layer cannot be characterized as transmissive. Indeed, if we assume that a 200 angstrom layer blocks 50% of the light, then a stack of five 200 angstrom thick layers (equaling 1000 angstroms in total thickness) would block about 97% of the light.

Vijan does acknowledge that there are applications (e.g. imagers) in which it is desirable to have the top metal layer be transmissive:

> In certain applications, such as imagers, the pin diode to be formed serves as a photodiode, and is illuminated from the top. Accordingly, layer 22 may also be made from a TCO material having characteristics like those previously described with respect to layer 12. Alternatively, a very thin, light transmissive, layer of chromium, for example, 60 to 200 thick angstroms, may be used instead of TCO material. (Col. 7, lines 60-68).

But in the entire Vijan patent we could find no described embodiments in which both the top and bottom are transmissive so that light can pass completely through the structure. Indeed, we could find no mention by Vijan of any applications that required a transmissive PIN structure which permitted light to pass completely through the structure thereby necessitating the use of light transmissive top and bottom conductors.

The examiner rejected claims 56, 61, and 62 under 35 U.S.C. §102(e) as anticipated by U.S. 6,300,648 to Mei et al. But contrary to what the examiner asserts, the Mei does not disclose a semitransparent optical detector, as recited in the claim. That is, the device identified by the

examiner (i.e., shown in Mei's Fig. 8) is not intended to allow light to pass completely through it. More specifically, contact pad 14 in the device shown in Fig. 8 obstructs the passage of light through the device and is not designed so that it "extends partially under the PIN diode and electrically contacts a bottom surface of the PIN diode leaving unobstructed a portion of the bottom surface directly opposite the aperture so that light can pass through the aperture into the diode and out of the bottom surface without being obstructed by the first conductive layer," as required by claim 56 as currently amended.

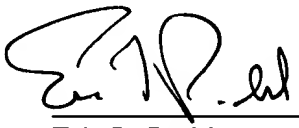
Finally, the examiner rejected claims 59 and 60 under 35 U.S.C. §102(b) as anticipated by EP-125,390 to Schaumburg. In response, we have canceled claims 59 and 60, without prejudice.

For the reasons stated above, we believe that the claims now pending in this application are allowable and therefore ask the Examiner to allow them to issue.

Please apply any charges not covered, or any credits, to Deposit Account No. 08-0219.

Respectfully submitted,

Date: June 9, 2004



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